REQUEST FOR PROPOSALS

Containerized Wood Chip Boiler System for Mentasta Traditional Council District Heating System
January 25, 2021

Notice to Bidders: Mentasta Traditional Council (MTC) is issuing a solicitation for procuring a containerized wood chip fired biomass boiler and fuel handling system for use in a small district heating system serving two buildings in Mentasta, Alaska. Through the following Request for Proposals (RFP), MTC is seeking proposals from qualified vendors of packaged biomass boiler systems. Bidder is responsible for all costs associated with developing and submitting a proposal. The terms "vendor", "bidder", and "provider" are considered synonymous for the purposes of this RFP and refer to the biomass boiler system provider.

Project Description: The overall project includes installation of a new district heating system (utilizing 50% propylene glycol) serving two buildings. The portion of the project considered in this RFP is the containerized biomass boiler and fuel handling system. A detailed description of the biomass system vendor's scope of work is included in Attachment B. The summary of the scope is for provision of a containerized biomass boiler that is sized to displace 6900 gallons of #1 heating fuel over an eight-month heating season. This system will include a rotating spring bottom fuel reclaim system (or other recommended system) for use in an attached "day bin", thermal storage tank, check, test, and startup of the boiler system, and coordination with MTC for integration of the boiler system with the buildings to be serviced.

Instructions: Brevity and clarity are encouraged and appreciated. Proposals are to include:

- Completed bid form (Attachment A),
- Any exceptions, clarifications or other recommendations on scope of vendor's work,
- Specifications of proposed equipment
- Cut sheets with dimensions for the containerized boiler system.
- Maximum rated heating output at each of the conditions identified in the Scope of Work
- Minimum firing rate turndown (in percentage of maximum firing rate) using 30% moisture content (wet basis) wood chips
- Boiler emissions data while firing on 30% moisture content (wet basis) wood chips
- Specifications providing range of allowable wood chip fuels. This is to include size/gradation, heating values, and moisture contents.
- Stated biomass system efficiency with either backup efficiency calculation or test result provided (backup must include defined fuel heating value and moisture content),
- References/contact information for a minimum of 3 existing (and similar) installations which the MTC team may call and/or visit.

Proposal Submission: Proposals are to emailed to:

Devany Plentovich, Consultant
Devany@PlenergySolutions.com

Proposals must be received **no later than 5:00 pm February 22, 2021.** Proposals must remain valid for a period of 90 calendar days from the date of the proposal deadline. MTC reserves the right to reject any and all proposals, negotiate with multiple vendors, and to waive any informality in the proposals received whenever such rejection or waiver is in the best interest of MTC.

Cost of Preparation: Respondents assume all cost of preparation of the proposal and any site visits that the respondent deems necessary for developing a proposal.

Communication: It is the responsibility of the respondent to inquire in writing about any requirement of this RFP that is not understood. Questions should be submitted to devany@plenergysolutions.com.

Project Timeline: Proposals must be received by MTC before February 22, 2021 at 5:00 pm Alaska time. MTC would like delivery of the boiler system by the end of July 2021, and MTC would like testing, startup, and training to occur in early fall of 2021. MTC will consider all proposed schedules.

Proposal Prices: Proposal prices are to remain firm and in effect for a period of ninety (90) days from receipt of proposals and may not be withdrawn after the proposal deadline. All bids are to be submitted on Appendix – A, Bid Price Form, with base price including major components breakdown, and prices for all listed alternates. Pricing for any recommended/proposed alternates that are not considered in the Scope of Work should be provided in the bidder's proposal.

Evaluation of Proposals and Award: MTC retains the right to reject any and all bids. MTC will review the proposals to determine best overall value considering price, performance, ease of operation, and history of equipment performance and vendor service. Vendors are encouraged to point out key and unique points of value their system brings to MTC. MTC reserves the right to request additional information from multiple firms as needed to ensure fair comparison and identify best value. MTC will then negotiate with the vendor it deems to offer the best value. Should an acceptable contract agreement not be reached with this vendor, MTC reserves the right to negotiate with another vendor of its choosing.

Warranties: The biomass system vendor is to provide at least a 1-year parts warranty for all equipment, controls, and programming to begin following check, test, startup and training, and acceptance of the system as properly operating by the MTC. Any warranties provided by manufacturers over and above 1 year will transfer to the MTC upon MTC acceptance. MTC will consider proposals for extended warranties.

Included with this RFP are the following Attachments:

1. Attachment A – Bid Form
2. Attachment B – Scope of Work
3. Attachment C – Original System Design

Attachment A

Scope of Work

Mentasta Traditional Council

Containerized Wood Chip Boiler System

January 25, 2021

BID FORM - STIPULATED SUM

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name:

C. Project Location:

D. Owner:

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Request for Proposal documents, Scope of Work, and all subsequent Addenda, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, freight, including all scheduled allowances, necessary to supply the equipment for the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).

B. Price Break Out for Specific Systems Included in the Base Bid

1. Containerized Wood Chip Boiler and Fuel Handling System
   a. Cost: Dollars ($_____).

2. Shipping of the Containerized Boiler and Fuel Handling System
   a. Cost: Dollars ($_____).

3. Start-up, Commissioning, and Training
   a. Cost: Dollars ($_____).

C. Alternate No. 1- Automatic Ash Removal System and Ash Bin:

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____ Dollars ($_____).

D. Alternate No. 2 – Boiler System Vendor Proposed Alternate:

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____ Dollars ($_____).

E. Alternate No. 3 - Boiler System Vendor Proposed Alternate:

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____ Dollars ($_____).

F. Alternate No. 4 - Boiler System Vendor Proposed Alternate:

1. ADD____ DEDUCT____ NO CHANGE____ NOT APPLICABLE____.

2. _____ Dollars ($_____).

1.3 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.
4. Addendum No. 4, dated _____.

1.4 ACCEPTANCE OF WORK ITEMS LISTED IN THE BID DOCUMENTS

A. The undersigned Bidder acknowledges that they have read the bid documents in their entirety and is including all of the items listed in the RFP, Scope of Work, and Appendices to provide a complete and working system except for the exclusions (if any) specifically listed here:

1. Exclusions _____.

1.5 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

DOCUMENT CONTINUES

1.6 SUBMISSION OF BID

Respectfully submitted this ____ day of _____, 20xx.

Submitted By: _____
(Name of bidding firm or corporation)

Authorized Signature: _____
(Handwritten signature)

Signed By: _____
(Type or print name)

Title: _____
(Owner/Partner/President/Vice President)

Street Address: _____

City, State, Zip _____

Phone: _____

END OF DOCUMENT

Attachment B

Scope of Work

Mentasta Traditional Council

Containerized Wood Chip Boiler System

January 25, 2021

1. Project Goal

The intent of the project is to install a containerized biomass wood chip boiler system that will utilize 50% propylene glycol as the heating medium for a small district heating system to supply two buildings owned by the Mentasta Traditional Council (MTC) located in Mentasta, Alaska. The intent of this Request for Proposals (RFP) is to competitively select the containerized wood chip boiler system based on the best overall value to MTC. This vendor will be responsible for supplying the complete containerized biomass system including thermal storage tank, heat exchanger, boiler controls, programming, fuel storage/handling/feed system, and other items required for a fully functional system. The vendor will also provide commissioning, startup, and training. This RFP does not include the district heating piping and pumps or the integrations with the building heating systems.

2. Background

The MTC wood chip system that includes the containerized biomass wood chip boiler and fuel handling system within this bid package was designed to heat a newly constructed 2,500 square foot Tribal Office and a newly constructed 2,500 square foot Clinic. The preliminary biomass heating design was completed at the same time as the building design, so the sizing of the heating system was estimated. The heating system for both buildings was anticipated to use about 6,900 gallons of #1 heating fuel. Actual heating fuel usage of both buildings has been less than the estimated usage (approximately 3000 gallons per year), but the clinic has not been fully utilized to date.

The original wood chip heating system was to be installed in a newly constructed boiler building. In order to reduce construction costs, the project team has elected to pursue a **containerized** wood chip boiler and fuel handling systems. Final building integration design modifications will take place after the containerized wood chip system is selected.

It is our desire that the fuel storage and feed system will be included in the containerized boiler package. The logistics for filling the fuel storage in the container will be critical to the success of the system. Mentasta, Alaska experiences very harsh winters with temperatures as low as -60°F and significant snow levels. Exterior hydraulic systems do not operate successfully in this environment. Special considerations must be considered in the recommendations for the fuel handling system.

The original design of the wood chip heating system (non-containerized) is included in the attachments for your reference.

3. Biomass Boiler Vendor Scope of Work

The scope of work for this RFP includes the containerized wood chip boiler, fuel storage and feed system, thermal storage tank, boiler controls, programming, and other items required for a fully functional system. A heat exchanger is required to separate the containerized boiler system for the district heating loop. The boiler vendor will supply the exchanger and the piping/pumps from the thermal storage to the heat exchanger. MTC will provide the piping and pumps from the heat exchanger to the buildings to be heated. The wood chip heating system can be housed in one container or multiple containers.

The intent is for the selected containerized boiler system vendor to provide startup & commissioning, and at least one day of training for the MTC operators for the wood chip boiler system.

Installation will be completed by MTC and their mechanical contractor. Selected boiler package vendor will provide design specifications for all equipment pads for the containerized boiler system and any other associated equipment provided. These pads will be constructed by others.

Major Components/Requirements of the System

The containerized biomass boiler system base bid is to include the following equipment and features:

1. Insulated container(s) suitable for the harsh winter conditions of Mentasta, AK. Please detail the insulation planned for the container(s).
2. Wood chip boiler system will utilize 50% propylene glycol and be sized to displace approximately 6900 gallons of #1 heating fuel oil heating fuel over an 8-month heating season in Mentasta, Alaska. The base 65 Heating Degree Days for the Mentasta area are 13763 (Slana, AK). We are anticipating a wood chip boiler that is sized between 150,000 Btu/hr and 250,000 Btu/hr to meet approximately 75% of the 6900 gallons fuel usage with a suitable turn down with thermal storage for lower production levels. Please describe the boiler sizing assumptions, process, and recommendations.
    a. The intent is to supply between 160-185°F to the district system based on a reset schedule. Return water temperatures will vary, but are expected to be between 155-180°F. As part of the bid proposal, the vendor must provide the maximum rated output and corresponding fuel input (30% moisture fuel) of the boiler at the following conditions:
        i. boiler outlet temperature of 190°F
        ii. Please note the normal operating temperature range and upper limit of your proposed boiler system.
        iii. Please provide allowable wood chip fuel specification, and fuel parameters (HHV and moisture content) on which the rated output is based and certified ratings for higher and lower moisture fuel contents or varying fuel types.
3. The boiler and fuel handling system must be capable of utilizing wood chips up to 30% moisture (wet basis) with an output at that fuel moisture corresponding to the boiler rating stated on the Bid Form. Other fuel moisture limitations may be considered. Please provide the allowable fuel specification for your boiler system as part of your bid. MTC would like to ensure maximize fuel flexibility. Please clearly specify the maximum moisture and size content allowable for your proposed boiler system.
4. The electric service available through the main service disconnect is 200 AMP, 120/240V, 60 Hz, Single Phase. The containerized system should be able to be powered by a single feeder from the existing electrical panel at the facility. Please specify the wire ampacity and breaker size required for this feeder to the containerized system.
5. The boiler must be able to modulate to lower output and/or shut down automatically when the heating load decreases or has been satisfied.
6. The boiler should have two-stage combustion. Please provide a description of how the boiler controls the draft, combustion air, and fuel feed to optimize combustion efficiency and to reduce emissions.
7. The boiler is preferred to have auto-combustion ignition. Please describe how this feature operates and how it is controlled. If the recommended system does not have auto-combustion ignition, please explain the combustion sequence of operation.
8. Provide an emission output in lb/mmBtu of PM based on heat input. Please specify the units as PM2.5, PM10, or Total PM, providing at least one of these.
9. Vendor shall provide a stack which is supported by the container, with a height no less than 5’ above the height of the MTC clinic. Stack shall discharge vertically with no obstructions, and stack should have tee, drip leg, and drain so water will not fall back into boiler.
10. Please provide the Nationally Recognized Testing Laboratory (e.g. UL) listing for the boiler system or plans to have the installation approved by the State of Alaska Fire Marshal.
11. MTC has a bulk chip storage building located about .25 mile from the clinic and Tribal offices. A Case 680 front end loader with a bucket will move chips from the bulk storage to the containerized chip system in this bid package. The community desires to maximize the chip storage volume to minimize how often the

chips have to be transferred from the bulk storage. Please specify how many days of chip storage at maximum boiler output you recommended system will provide.

12. The handling system will be a rotating spring bottom reclaim system located in the container. MTC will be willing to consider other fuel handling proposals.
    a. The reclaim system's allowable fuel specification shall be specifically and clearly defined by the Vendor. It must be specifically rated to be equally or more flexible in fuel types than the combustion system.
    b. If the fuel handling system provides any screening and removal of oversize or undersize fuel pieces, please describe.
13. Feed system from the spring bottom reclaim (or similar) will automatically feed the biomass boiler based on the heating demand. Please describe the control sequencing.
14. The system should include an appropriately sized thermal storage system in the container to maximize the flexibility and efficiency of the boiler system. Please describe how the thermal storage was sized. Include details of the tank size and material of construction, the number of temperature transmitters, the number and size of the piping connections including drain valve, air vent, and pressure relief valve. Describe the pressure testing protocol to ensure that it is water tight.
15. The system must be designed to allow the storage tank itself to be at a higher temperature than the district/distribution system.
16. The entire boiler system and district heating piping will utilize water with 50% propylene glycol. The system will also require a heat exchanger between the chip boiler/thermal storage system and the district heating piping.
17. The system must provide pump sets that provide redundancy and that will automatically lead lag at any point in the container system where pumping is required to provide heat to the buildings.
18. The pumps for the district heating system will be provided by the owner, but our desire is to locate the pumps in the container with the chip boiler if possible. Please indicate if there is sufficient room in the container to house 2 district heating pumps.
19. The boiler system should have an automatic emergency shutdown of system.
20. If available, an automatic remote warning system to notify the operator of system malfunction is desirable.
21. All piping and thermal storage tank in container must be insulated to current AK code.
22. System provided by Vendor including boiler and thermal storage tank shall comply with all applicable boiler and pressure vessel codes. Please specify Maximum Allowable Working Pressure of system. If equipment lacks ASME stamp and cannot be pressurized, please describe the atmospheric vent system that will be provided by Vendor.
23. Vendor is required to provide check, test, and startup of the biomass system following installation, and will provide at least one additional day of training for the MTC staff. This is to be in the quoted price, as a separate line item.
24. Minimum one (1) year parts warranty on the complete biomass boiler and fuel handling system. The warranty is to commence following check, test, startup by the boiler vendor, training of MTC staff, and MTC acceptance of the system as properly operational. MTC will consider extended warranty options.

4. General fuel specification for purpose of boiler system design

The MTC is seeking to maximize the variability of fuel that can be utilized in the biomass heating system. Please provide a description of the full range of allowable biomass fuel specifications as part of your bid. Parameters described should include ash content, moisture content, particle size, particle shape. Please describe how the rated boiler output is affected by fuel which is wetter or drier than 30% moisture fuel. Fuel is anticipated to be generally free of dirt, rocks, snow, ice, moose legs, and other foreign materials. The fuel will be clean and free of any contaminants such as: paint, glue, resin, chlorides, or any other contaminant foreign to wood.

5. Alternates

Pricing is to be provided as appropriate for each of the following alternates on the bid form. The intent of the alternates is that the equipment identified will meet the performance requirements specified previously and will be integrated into the overall package for the price provided by the biomass boiler vendor. Three extra spaces for alternates are provided on the bid form (Alternates 2-4) that can be proposed by the vendor if they have a suggestion that can make the project better/add value.

Alternate 1 – Provide a Net ADD for an automatic ash handling system. System will include a method of conveyance (auger or pneumatic) to a bin supplied by the boiler vendor.

6. Exclusions

It is anticipated that the following items will not be included in the boiler vendor's contract and will be provided by others.

1. Construction of foundation and housekeeping pad for the boiler
2. Power feed to the container
3. District hot water pumps
4. District piping
5. Installation onsite (note this does not refer to work internal to the containerized fully functioning system)